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VOLATILE ORGANIC COMPOUNDS

WHAT ARE VOLATILE ORGANIC COMPOUNDS?

Volatile Organic Compounds (VOCs) are chemicals that evaporate easily at room temperature. The term *organic* in VOCs indicates that the compounds contain carbon. Some VOCs are more harmful than others. VOCs can be found in both indoor and outdoor environments. Concentrations of many VOCs are consistently higher indoors - up to 10 times higher - than outdoors. There are thousands of different products containing VOCs used in our daily lives.

WHERE DO VOLATILE ORGANIC COMPOUNDS COME FROM?

VOCs are emitted from a wide variety of manufacturing processes and product use. The table below lists several of these sources.

Emission Sources	
<ul style="list-style-type: none">• Motor vehicles• Cosmetics and hair products• Industrial adhesives• Residential fuel combustion• Cooking	<ul style="list-style-type: none">• Gasoline• Solvents• Varnishes and paints• Industrial surface coating• Naturally-occurring sources

WHAT ARE THE HUMAN HEALTH AND ENVIRONMENTAL EFFECTS?

VOCs are one of the main ingredients involved in the formation of ground-level ozone and are also precursors to fine-particle pollution, both of which can trigger serious health and environmental problems. Controlling VOCs is critical to controlling ground-level ozone.

Health Effects	Environmental Effects
<ul style="list-style-type: none">• Eye irritation/watering• Nose and throat irritation• Headaches and dizziness• Nausea/vomiting• Asthma exacerbation• Cancer• Liver, kidney and central nervous system damage	<ul style="list-style-type: none">• Weakens and damages crops and other vegetation vital to healthy ecosystems• Contributes to formation of smog• Contributes to global warming

Some people are at a greater risk from VOC exposure than others are. People with respiratory problems such as asthma, young children, the elderly and people with heightened sensitivity to chemicals may be more susceptible to illness from VOC exposure.

WHAT ARE THE MONITORING TRENDS IN NEW JERSEY?

Over the years, air quality in New Jersey has been improving. However, new, more stringent federal health-based standards for ozone and fine particulates, which were promulgated in 1997, require states to do more to protect human health. Reducing emissions of VOCs will assist New Jersey in attaining the new standards for ozone and fine particulates, since VOCs react chemically to form ground-level ozone and fine-particle pollution. VOCs also include over 100 organic hydrocarbon air pollutants, such as benzene, toluene, and styrene. Many are hazardous air pollutants (HAPs) as defined in the Clean Air Act Amendments. Hence, reducing VOCs also reduces exposure to air toxics.

New Jersey's air monitoring program evaluates hourly air quality readings using the national methodology called the Air Quality Index (AQI). The AQI uses five of the six pollutants for which there are national health-based standards (carbon monoxide, nitrogen dioxide, ground-level ozone, particulates and sulfur dioxide) and compares the composite pollutant levels to the federal standards in order to assign an air quality rating such as "good" or "unhealthy." Based on the AQI scale and applying the new ozone and fine particulate standard, New Jersey had 28 days of unhealthy levels of ozone and fine-particle pollution in 2003. Even with wet, cool summer conditions favorable to healthy air, New Jersey still experienced 19 days of unhealthy ozone and fine-particle pollution in 2004. New Jersey experienced 29 days of unhealthy ozone and fine-particle pollution in 2005.

WHAT IS BEING DONE ABOUT VOLATILE ORGANIC COMPOUNDS?

- ❖ Under the federal Clean Air Act, the US Environmental Protection Agency (USEPA) has set protective health-based standards for ozone in the air we breathe. The USEPA and state and local governments have instituted a variety of multi-faceted programs to meet these health-based standards by targeting VOC emissions.
- ❖ Throughout the country, additional programs are being put into place to cut VOC emissions from vehicles (such as vehicle inspection & maintenance (I/M) programs), industrial facilities and electric utilities. Programs are also aimed at reducing pollution by reformulating fuels and consumer/commercial product, such as hairsprays and chemical solvents that contain VOCs.
- ❖ Non-regulatory programs encourage communities to adopt practices such as carpooling, to reduce harmful emissions.
- ❖ Even though there are multiple initiatives in place to reduce VOC emissions, we need to do more to improve air quality in New Jersey.